

**WHAT IS CLAIMED IS:**

1. An isolated, immunogenic HAV peptide, said immunogenic peptide comprising an amino acid sequence which is substantially similar to a portion of the  
5 amino acid sequence of the VP4 protein of HAV corresponding to amino acids 1 to about 23 and a portion of the amino acid sequence of the VP2 protein of HAV virus corresponding to amino acids 24 to about 245.

2. The immunogenic peptide in accordance with claim 1, wherein  
10 said immunogenic peptide binds to an antibody specifically immunoreactive with a peptide selected from the group consisting of

15 GLDHILSLADIEEEQMIQSV (YK-1206), (Seq. I.D. 1);  
DRTAVTGASYFTSVDQSSVH (YK-1208), (Seq. I.D. 2);  
EVGSHQVEPLRTSVDKPGSK (YK-1210), (Seq. I.D. 3);  
EPLRTSVDKPGSKKTQGEKF (YK-1211), (Seq. I.D. 4);  
DKPGSKKTQGEKFFLIHSAD (YK-1212), (Seq. I.D. 5);  
LYNEQFAVQGLLRHYHTYARF (YK-1215), (Seq. I.D. 6);  
20 HTYARFGIEIQVQINPTPFQ (YK-1216), (Seq. I.D. 7);  
INPTPFQGGGLICAMVPGDQ (YK-1217), (Seq. I.D. 8);  
HFKDPQYPVWELTIRVWSEL (YK-1222), (Seq. I.D. 9);  
NIGTGTSAYTSLNVLARFTD (YK-1224), (Seq. I.D. 10);

and conservative variations thereof.

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3. The immunogenic peptide in accordance with claim 1, wherein  
said immunogenic peptide comprises an amino acid sequence selected from the group  
consisting of

30 GLDHILSLADIEEEQMIQSV (YK-1206), (Seq. I.D. 1);  
DRTAVTGASYFTSVDQSSVH (YK-1208), (Seq. I.D. 2);  
EVGSHQVEPLRTSVDKPGSK (YK-1210), (Seq. I.D. 3);  
EPLRTSVDKPGSKKTQGEKF (YK-1211), (Seq. I.D. 4);  
35 DKPGSKKTQGEKFFLIHSAD (YK-1212), (Seq. I.D. 5);  
LYNEQFAVQGLLRHYHTYARF (YK-1215), (Seq. I.D. 6);  
HTYARFGIEIQVQINPTPFQ (YK-1216), (Seq. I.D. 7);  
INPTPFQGGGLICAMVPGDQ (YK-1217), (Seq. I.D. 8);  
40 HFKDPQYPVWELTIRVWSEL (YK-1222), (Seq. I.D. 9);  
NIGTGTSAYTSLNVLARFTD (YK-1224), (Seq. I.D. 10);

and conservative variations thereof.

4. The immunogenic peptide in accordance with claim 1, wherein  
45 said immunogenic peptide is conjugated to a carrier protein.

5. The immunogenic peptide in accordance with claim 4, wherein said carrier protein is a member selected from the group consisting of serum albumin, keyhole limpet hemocyanin, diphtheria toxin, tetanus toxin and synthetic polymers.

6. The immunogenic peptide in accordance with claim 1, further comprising a pharmaceutically acceptable carrier.

7. An isolated, immunogenic HAV peptide, said immunogenic peptide comprising an amino acid sequence which is substantially similar to a portion of the VP3 protein of HAV corresponding to amino acids 246 to about 491.

8. The immunogenic peptide in accordance with claim 7, wherein said immunogenic peptide binds to an antibody specifically immunoreactive with a peptide selected from the group consisting of

SDPSQGGGIKITHFTTWTSI (YK-1235), (Seq. I.D. 11);  
GGIKITHFTTWTSIPTLAAQ (YK-1236), (Seq. I.D. 12);  
QFPFNASDSVGQQIKVIPVD (YK-1241), (Seq. I.D. 13);  
FNASDSVGQQIKVIPVDPYF (YK-1242), (Seq. I.D. 14);  
SDSVGQQIKVIPVDPYFFQM (YK-1243), (Seq. I.D. 15);  
IKVIPVDPYFFQMTNTNPDQ (YK-1244), (Seq. I.D. 16);  
KCITALASICQMFCFWRGDL (YK-1247), (Seq. I.D. 17);  
FWRGDLVDFQVFPTKYHSG (YK-1248), (Seq. I.D. 18);  
FDFQVFPTKYHSGRLLFCFV (YK-1249), (Seq. I.D. 19);  
FPTKYHSGRLLFCFVPGNEL (YK-1250), (Seq. I.D. 20);  
GITLKQATTAPCAVMDITGV (YK-1252), (Seq. I.D. 21);  
VASHVRVNVYLSAINLECFA (YK-1261), (Seq. I.D. 22);

and conservative variations thereof.

9. The immunogenic peptide in accordance with claim 7, wherein said immunogenic peptide comprises an amino acid sequence selected from the group consisting of

SDPSQGGGIKITHFTTWTSI (YK-1235), (Seq. I.D. 11);  
GGIKITHFTTWTSIPTLAAQ (YK-1236), (Seq. I.D. 12);  
QFPFNASDSVGQQIKVIPVD (YK-1241), (Seq. I.D. 13);  
FNASDSVGQQIKVIPVDPYF (YK-1242), (Seq. I.D. 14);  
SDSVGQQIKVIPVDPYFFQM (YK-1243), (Seq. I.D. 15);  
IKVIPVDPYFFQMTNTNPDQ (YK-1244), (Seq. I.D. 16);  
KCITALASICQMFCFWRGDL (YK-1247), (Seq. I.D. 17);  
FWRGDLVDFQVFPTKYHSG (YK-1248), (Seq. I.D. 18);  
FDFQVFPTKYHSGRLLFCFV (YK-1249), (Seq. I.D. 19);  
FPTKYHSGRLLFCFVPGNEL (YK-1250), (Seq. I.D. 20);  
GITLKQATTAPCAVMDITGV (YK-1252), (Seq. I.D. 21);

VASHVRVNVYLSAINLECFA (YK-1261), (Seq. I.D. 22);

and conservative variations thereof.

5                   10. The immunogenic peptide in accordance with claim 7, wherein said immunogenic peptide is conjugated to a carrier protein.

11. The immunogenic peptide in accordance with claim 7, further comprising a pharmaceutically acceptable carrier.

10                   12. An isolated immunogenic HAV peptide, said immunogenic peptide comprising an amino acid sequence which is substantially similar to a portion of the VP1 protein of HAV corresponding to amino acids 492 to about 791.

15                   13. The immunogenic peptide in accordance with claim 12, wherein said immunogenic peptide binds to an antibody specifically immunoreactive with a peptide selected from the group consisting of

20                   TTVSTEQNVPDPQVGITTMK (YK-1265), (Seq. I.D. 23);  
QNVPDPQVGITTMKDLKGKA (YK-1266), (Seq. I.D. 24);  
NRGKMDVSGVQAPVGAITTI (YK-1268), (Seq. I.D. 25);  
ITTIEDPVLAKKVPETFPEL (YK-1271), (Seq. I.D. 26);  
EDPVLAKKVPETFPELKPGE (YK-1272), (Seq. I.D. 27);  
25                   AKKVPETFPELKPGESRHTS (YK-1273), (Seq. I.D. 28);  
FPELKPGESRHTSDHMSIYK (YK-1274), (Seq. I.D. 29);  
DHMSIYKFMGRSHFLCTFTF (YK-1276), (Seq. I.D. 30);  
HFLCTFTFNSNNKEYTFPIT (YK-1279), (Seq. I.D. 31);  
TPVGLAVDTPWVEKESALSI (YK-1290), (Seq. I.D. 32);  
LSFSCYLSVTEQSEFYFPRA (YK-1307), (Seq. I.D. 33);  
30                   SVTEQSEFYFPRAPLNSNAM (YK-1308), (Seq. I.D. 34);  
PLNSNAMLSTESMMSRIAAG (YK-1310), (Seq. I.D. 35);  
MSRIAAGDLESSVDDPRSEE (YK-1312), (Seq. I.D. 36);  
AGDLESSVDDPRSEEDKRFE (YK-1313), (Seq. I.D. 37);  
VDDPRSEEDKRFESHIECRK (YK-1314), (Seq. I.D. 38); and

35                   conservative variations thereof.

14. The immunogenic peptide in accordance with claim 12, wherein said immunogenic peptide comprises an amino acid sequence selected from the group consisting of

40                   TTVSTEQNVPDPQVGITTMK (YK-1265), (Seq. I.D. 23);  
QNVPDPQVGITTMKDLKGKA (YK-1266), (Seq. I.D. 24);  
NRGKMDVSGVQAPVGAITTI (YK-1268), (Seq. I.D. 25);  
45                   ITTIEDPVLAKKVPETFPEL (YK-1271), (Seq. I.D. 26);

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EDPVLAKKVPETFPELKPGE (YK-1272), (Seq. I.D. 27);  
AKKVPETFPELKPGE SRHTS (YK-1273), (Seq. I.D. 28);  
FPELKPGE SRHTSDHMSIYK (YK-1274), (Seq. I.D. 29);  
DHMSIYKFMGRSHFLCTFTF (YK-1276), (Seq. I.D. 30);  
HFLCTFTFN SNNKEYTFPIT (YK-1279), (Seq. I.D. 31);  
TPVGLAVDTPWVEKESALSI (YK-1290), (Seq. I.D. 32);  
LSFSCYLSVTEQSEFYFPRA (YK-1307), (Seq. I.D. 33);  
SVTEQSEFYFPRA PLNSNAM (YK-1308), (Seq. I.D. 34);  
PLNSNAM LSTESMMSRIAAG (YK-1310), (Seq. I.D. 35);  
MSRIAAGDLESSVDDPRSEE (YK-1312), (Seq. I.D. 36);  
AGDLESSVDDPRSEEDKRFE (YK-1313), (Seq. I.D. 37);  
VDDPRSEEDKRFE SHIECRK (YK-1314), (Seq. I.D. 38); and

conservative variations thereof.

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15. The immunogenic peptide in accordance with claim 12, wherein said immunogenic peptide is conjugated to a carrier protein.

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16. The immunogenic peptide in accordance with claim 12, further comprising a pharmaceutically acceptable carrier.

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17. An isolated, immunogenic HAV peptide, said immunogenic peptide comprising an amino acid sequence which is substantially similar to a portion of the P2A protein of HAV corresponding to amino acids 792 to about 980.

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18. The immunogenic peptide in accordance with claim 17 wherein said immunogenic peptide binds to an antibody specifically immunoreactive with a peptide selected from the group consisting of

SHIECRKPYKELRLEV GKOR (YK-1315), (Seq. I.D. 39);  
PYKELRLEV GKQRLKYAQEE (YK-1316), (Seq. I.D. 40);  
QRLKYAQEELSNEVLPPPRK (YK-1317), (Seq. I.D. 41);  
VLPPPRKMKGLFSQAKISLF (YK-1318), (Seq. I.D. 42);  
FSQAKISLFYTEEHEIMKFS (YK-1319), (Seq. I.D. 43);  
KVNFPHGMLDLEEIAANSKD (YK-1327), (Seq. I.D. 44);  
DLEEIAANSKDFPNMSETDL (YK-1328), (Seq. I.D. 45);  
KINLADRMLGLSGVQEIKEQ (YK-1331), (Seq. I.D. 46);  
QRLKYAQEELSNEVLPPPRKMKGLF (YK-1665), (Seq. I.D.

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48;

WLNPKKINLADRMLGLSGVQEIKEQ (YK-1757), (Seq. I.D.

and conservative variations thereof.

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19. The immunogenic peptide in accordance with claim 17, wherein said immunogenic peptide comprises an amino acid sequence selected from the group consisting of

5 SHIECRKPYKELRLEVVGKQR (YK-1315), (Seq. I.D. 39);  
PYKELRLEVVGKQRLKYAQEE (YK-1316), (Seq. I.D. 40);  
QRLKYAQEELSNEVLPPPRK (YK-1317), (Seq. I.D. 41);  
VLPPPRKMKGLFSQAKISLF (YK-1318), (Seq. I.D. 42);  
FSQAKISLFYTEEHEIMKFS (YK-1319), (Seq. I.D. 43);  
KVNFPHGMLDLEEIAANSKD (YK-1327), (Seq. I.D. 44);  
DLEEIAANSKDFPNMSETDL (YK-1328), (Seq. I.D. 45);  
10 KINLADRMLGLSGVQEIKEQ (YK-1331), (Seq. I.D. 46);  
QRLKYAQEELSNEVLPPPRKMKGLF (YK-1665), (Seq. I.D.  
47);  
WLNPKKINLADRMLGLSGVQEIKEQ (YK-1757), (Seq. I.D.  
48);

15 and conservative variations thereof.

20. The immunogenic peptide in accordance with claim 17,  
wherein said immunogenic peptide is conjugated to a carrier protein.

21. The immunogenic peptide in accordance with claim 17, further  
comprising a pharmaceutically acceptable carrier.

22. An isolated, immunogenic HAV peptide, said immunogenic  
peptide comprising an amino acid sequence which is substantially similar to a portion of the  
25 P2B protein of HAV corresponding to amino acids 981 to about 1087.

23. The immunogenic peptide in accordance with claim 22,  
wherein said immunogenic peptide binds to an antibody specifically immunoreactive with a  
peptide selected from the group consisting of

30 VIQQLNQDEHSHIIGLLRVM (YK-1334), (Seq. I.D. 49); and  
conservative variations thereof.

24. The isolated, immunogenic peptide in accordance with claim  
35 22, wherein said immunogenic peptide comprises an amino acid sequence selected from the  
group consisting of

VIQQLNQDEHSHIIGLLRVM (YK-1334), (Seq. I.D.  
49);

40 and conservative variations thereof.

25. The immunogenic peptide in accordance with claim 22,  
wherein said immunogenic peptide is conjugated to a carrier protein.

26. The immunogenic peptide in accordance with claim 22, further comprising a pharmaceutically acceptable carrier.

5 27. An isolated, immunogenic HAV peptide, said immunogenic peptide comprising an amino acid sequence which is substantially similar to a portion of the P2C protein of HAV corresponding to amino acids 1088 to about 1422.

28. The immunogenic peptide in accordance with claim 27,  
10 wherein said immunogenic peptide binds to an antibody specifically immunoreactive with a peptide selected from the group consisting of

15 NILKDNQQKIEKAIEEAEDEF (YK-1341), (Seq. I.D. 50);  
LGSINQAMVTRCEPVVCYLY (YK-1347), (Seq. I.D. 51);  
RCEPVVCYLYGKRGGGKSLT (YK-1348), (Seq. I.D. 52);  
TKPVASDYWDGYSGQLVCII (YK-1352), (Seq. I.D. 53);  
VSGCPMRLNMAASLEEKGRHF (YK-1356), (Seq. I.D. 54);  
LNMAASLEEKGRHFSSPFIIA (YK-1357), (Seq. I.D. 55);  
20 NPSPKTVYVKEAIDRRLHFK (YK-1360), (Seq. I.D. 56);  
VKEAIDRRLHFKVEVKPASF (YK-1361), (Seq. I.D. 57);  
VKPASFFKNPHNDMLNVNLA (YK-1362), (Seq. I.D. 58);  
KNPHNDMLNVNLAKTNDIAIK (YK-1363), (Seq. I.D. 59);  
LAKTNDIAIKDMSVDLIMDG (YK-1364), (Seq. I.D. 60);  
25 VMTVEIRKQNMTEFMELWSQ (YK-1367), (Seq. I.D. 61);

and conservative variations thereof.

29. The immunogenic peptide in accordance with claim 27,  
wherein said immunogenic peptide comprises an amino acid sequence selected from the  
30 group consisting of

35 NILKDNQQKIEKAIEEAEDEF (YK-1341), (Seq. I.D. 50);  
LGSINQAMVTRCEPVVCYLY (YK-1347), (Seq. I.D. 51);  
RCEPVVCYLYGKRGGGKSLT (YK-1348), (Seq. I.D. 52);  
TKPVASDYWDGYSGQLVCII (YK-1352), (Seq. I.D. 53);  
VSGCPMRLNMAASLEEKGRHF (YK-1356), (Seq. I.D. 54);  
LNMAASLEEKGRHFSSPFIIA (YK-1357), (Seq. I.D. 55);  
NPSPKTVYVKEAIDRRLHFK (YK-1360), (Seq. I.D. 56);  
VKEAIDRRLHFKVEVKPASF (YK-1361), (Seq. I.D. 57);  
40 VKPASFFKNPHNDMLNVNLA (YK-1362), (Seq. I.D. 58);  
KNPHNDMLNVNLAKTNDIAIK (YK-1363), (Seq. I.D. 59);  
LAKTNDIAIKDMSVDLIMDG (YK-1364), (Seq. I.D. 60);  
VMTVEIRKQNMTEFMELWSQ (YK-1367), (Seq. I.D. 61);

45 and conservative variations thereof.

30. The immunogenic peptide in accordance with claim 27, wherein said immunogenic peptide is conjugated to a carrier protein.

31. The immunogenic peptide in accordance with claim 27, further comprising a pharmaceutically acceptable carrier.

32. An isolated, immunogenic HAV peptide, said immunogenic peptide comprising an amino acid sequence which is substantially similar to a portion of the P3A protein of HAV corresponding to amino acids 1423 to about 1496.

33. The immunogenic peptide in accordance with claim 27, wherein said immunogenic peptide binds to an antibody specifically immunoreactive with a peptide selected from the group consisting of

SQGISDDDDNSAVAEFFQSF (YK-1368), (Seq. I.D. 62);  
DSAVAEFFQSFPSGEPNSK (YK-1369), (Seq. I.D. 63);  
FQSFPSGEPNSKLSGFFQS (YK-1370), (Seq. I.D. 64);  
SAVAEFFQSFPSGEPNSKLSGFFQ (YK-1832), (Seq. I.D. 65);

and conservative variations thereof.

34. The immunogenic peptide in accordance with claim 32, wherein said immunogenic peptide comprises an amino acid sequence selected from the group consisting of

SQGISDDDDNSAVAEFFQSF (YK-1368), (Seq. I.D. 62);  
DSAVAEFFQSFPSGEPNSK (YK-1369), (Seq. I.D. 63);  
FQSFPSGEPNSKLSGFFQS (YK-1370), (Seq. I.D. 64);  
SAVAEFFQSFPSGEPNSKLSGFFQ (YK-1832), (Seq. I.D. 65);

and conservative variations thereof.

35. The immunogenic peptide in accordance with claim 32, wherein said immunogenic peptide is conjugated to a carrier protein.

36. The immunogenic peptide in accordance with claim 32, further comprising a pharmaceutically acceptable carrier.

37. An isolated, immunogenic HAV peptide, said immunogenic peptide comprising an amino acid sequence substantially similar to a portion of the P3B

protein of HAV corresponding to amino acids 1423 to about 1496.

38. The immunogenic peptide in accordance with claim 27,  
wherein said immunogenic peptide binds to an antibody specifically immunoreactive with a  
5 peptide selected from the group consisting of  
HGVTKPKQVIKLDADPVESQ (YK-1374); and  
conservative variations thereof.

39. The immunogenic peptide in accordance with claim 37,  
10 wherein said immunogenic peptide comprises an amino-acid sequence selected from the  
group consisting of

HGVTKPKQVIKLDADPVESQ (YK-1374), (Seq. I.D. 66); and  
conservative variations thereof.

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40. The immunogenic peptide in accordance with claim 37,  
wherein said immunogenic peptide is conjugated to a carrier protein.

41. The immunogenic peptide in accordance with claim 37, further  
20 comprising a pharmaceutically acceptable carrier.

42. An isolated, immunogenic HAV peptide, said immunogenic  
peptide comprising an amino acid sequence which is substantially similar to a portion of the  
P3C protein of HAV corresponding to amino acids 1520 to about 1738.

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43. The immunogenic peptide in accordance with claim 27,  
wherein said immunogenic peptide binds to an antibody specifically immunoreactive with a  
peptide selected from the group consisting of

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GLVRKNLVQFGVGEKNGCVR (YK-1376), (Seq. I.D. 67);  
DVVLMKVPTIPKFRDITQHF (YK-1382), (Seq. I.D. 68);  
MEEKATYVHKKNDGTTVDLT (YK-1388), (Seq. I.D. 69);  
KNDGTTVDLTVDQAWRGKGE (YK-1389), (Seq. I.D. 70);  
RGKGGLPGMCGGALVSSNQ (YK-1390), (Seq. I.D. 71);

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VAKLVTQEMFQNIDKKIESQ (YK-1393), (Seq. I.D. 72); and  
conservative variations thereof.

44. The immunogenic peptide in accordance with claim 42,  
wherein said immunogenic peptide comprises an amino acid sequence selected from the  
40 group consisting of



5 GLVRKNLVQFGVGEKNGCVR (YK-1376), (Seq. I.D. 67);  
DVVLMKVPTIPKFRDITQHF (YK-1382), (Seq. I.D. 68);  
MEEKATYVHKKNDGTTVDLT (YK-1388), (Seq. I.D. 69);  
KNDGTTVDLTVDQAWRGKGE (YK-1389), (Seq. I.D. 70);  
RGKGEGLPGMCGGALVSSNQ (YK-1390), (Seq. I.D. 71);  
VAKLVTQEMFQNIDKKIESQ (YK-1393), (Seq. I.D. 72); and  
conservative variations thereof.

10 45. The immunogenic peptide in accordance with claim 42,  
wherein said immunogenic peptide is conjugated to a carrier protein.

46. The immunogenic peptide in accordance with claim 42, further  
comprising a pharmaceutically acceptable carrier.

15 47. An immunogenic composition comprising a pharmaceutically  
acceptable carrier and an isolated, immunogenic HAV peptide in an amount sufficient to  
induce a protective immune response to HAV in a mammal, said immunogenic peptide  
comprising an amino acid sequence selected from the group consisting of

20 GLDHILSLADIEEEQMIQSV (YK-1206), (Seq. I.D. 1);  
DRTAVTGASYFTSVDSQSSVH (YK-1208), (Seq. I.D. 2);  
EVGSHQVEPLRTSVDKPGSK (YK-1210), (Seq. I.D. 3);  
EPLRTSVDKPGSKKTQGEKF (YK-1211), (Seq. I.D. 4);  
25 DKPGSKKTQGEKFFLIHSAD (YK-1212), (Seq. I.D. 5);  
LYNEQFAVQGLLRYHTYARF (YK-1215), (Seq. I.D. 6);  
HTYARFGIEIQVQINPTPFQ (YK-1216), (Seq. I.D. 7);  
INPTPFQGGGLICAMVPGDQ (YK-1217), (Seq. I.D. 8);  
HFKDPQYPVWELTIRVWSEL (YK-1222), (Seq. I.D. 9);  
30 NIGTGTSAYTSLNVLARFTD (YK-1224), (Seq. I.D. 10);  
SDPSQGGGIKITHETFTWTSI (YK-1235), (Seq. I.D. 11);  
GGIKITHFTTWTSIPTLAAQ (YK-1236), (Seq. I.D. 12);  
QFPFNASDSVGQQIKVIPVD (YK-1241), (Seq. I.D. 13);  
FNASDSVGQQIKVIPVDPYF (YK-1242), (Seq. I.D. 14);  
35 SDSVGQQIKVIPVDPYFFQM (YK-1243), (Seq. I.D. 15);  
IKVIPVDPYFFQMTNTNPDQ (YK-1244), (Seq. I.D. 16);  
KCITALASICQMFCFWRGDL (YK-1247), (Seq. I.D. 17);  
FWRGDLVFDQVFPTKYHSG (YK-1248), (Seq. I.D. 18);  
FDFQVFPTKYHSGRLLFCFV (YK-1249), (Seq. I.D. 19);  
40 FPTKYHSGRLLFCFVPGNEL (YK-1250), (Seq. I.D. 20);  
GITLKQATTAPCAVMDITGV (YK-1252), (Seq. I.D. 21);  
VASHVRVNVYLSAINLECFA (YK-1261), (Seq. I.D. 22);  
TTVSTEQNVDPDPQVGITTMK (YK-1265), (Seq. I.D. 23);  
QNVDPDPQVGITTMKDLKGKA (YK-1266), (Seq. I.D. 24);  
45 NRGKMDVSGVQAPVGAITTI (YK-1268), (Seq. I.D. 25);  
ITTIEDPVLAKKVPETFPPEL (YK-1271), (Seq. I.D. 26);  
EDPVLAKKVPETFPPELKPGE (YK-1272), (Seq. I.D. 27);  
AKKVPETFPPELKPGESRHTS (YK-1273), (Seq. I.D. 28);

5 FPELKPGESRHTSDHMSIYK (YK-1274), (Seq. I.D. 29);  
DHMSIYKFMGRSHFLCTFTF (YK-1276), (Seq. I.D. 30);  
HFLCTFTFNSNNKEYTFPIT (YK-1279), (Seq. I.D. 31);  
TPVGLAVDTPWVEKESALSI (YK-1290), (Seq. I.D. 32);  
LSFSCYLSVTEQSEFYFPRA (YK-1307), (Seq. I.D. 33);  
SVTEQSEFYFPRAPLNSNAM (YK-1308), (Seq. I.D. 34);  
PLNSNAMLSTESMMSRIAAG (YK-1310), (Seq. I.D. 35);  
MSRIAAGDLESSVDDPRSEE (YK-1312), (Seq. I.D. 36);  
AGDLESSVDDPRSEEDKRFE (YK-1313), (Seq. I.D. 37);  
10 VDDPRSEEDKRFESHIECRK (YK-1314), (Seq. I.D. 38);  
SHIECRKPYKELRLEVVGKQR (YK-1315), (Seq. I.D. 39);  
PYKELRLEVVGKQRLKYAQEE (YK-1316), (Seq. I.D. 40);  
QRLKYAQEELSNEVLPPPRK (YK-1317), (Seq. I.D. 41);  
VLPPPRKMKGLFSQAKISLF (YK-1318), (Seq. I.D. 42);  
15 FSQAKISLFYTEEHEIMKFS (YK-1319), (Seq. I.D. 43);  
KVNFPHGMLDLEEIAANSKD (YK-1327), (Seq. I.D. 44);  
DLEEIAANSKDFPNMSETDL (YK-1328), (Seq. I.D. 45);  
KINLADRMLGLSGVQEIKEQ (YK-1331), (Seq. I.D. 46);  
QRLKYAQEELSNEVLPPPRKMKGLF (YK-1665), (Seq. I.D.  
20 47);  
WLNPKKINLADRMLGLSGVQEIKEQ (YK-1757), (Seq. I.D.  
48);  
VIQQLNQDEHSHIIGLLRVM (KY-1334), (Seq. I.D. 49);  
NILKDNQQKIEKAIEEAEDEF (YK-1341), (Seq. I.D. 50);  
25 LGSINQAMVTRCEPVVCYLY (YK-1347), (Seq. I.D. 51);  
RCEPVVCYLYGKRGGGKSLT (YK-1348), (Seq. I.D. 52);  
TKPVASDYWDGYSGQLVCH (YK-1352), (Seq. I.D. 53);  
VSGCPMRLNMALEEKGRRHF (YK-1356), (Seq. I.D. 54);  
LNMASLEEKGRRHFSSPPIA (YK-1357), (Seq. I.D. 55);  
30 NPSPKTVYVKEAIDRRLHFK (YK-1360), (Seq. I.D. 56);  
VKEAIDRRLHFKVEVKPASF (YK-1361), (Seq. I.D. 57);  
VKPASFFKNPHNDMLNVNLA (YK-1362), (Seq. I.D. 58);  
KNPHNDMLNVNLAKTNDAIK (YK-1363), (Seq. I.D. 59);  
LAKTNDAIKDMSCVDLMDG (YK-1364), (Seq. I.D. 60);  
35 VMTVEIRKQNMTEFMELWSQ (YK-1367), (Seq. I.D. 61);  
SQGISDDNDNSAVAEFFQSF (YK-1368), (Seq. I.D. 62);  
DSAVAEFFQSFPSGEPSNSK (YK-1369), (Seq. I.D. 63);  
FQSFPSGEPSNSKLSGFFQS (YK-1370), (Seq. I.D. 64);  
SAVAEFFQSFPSGEPSNSKLSGFFQ (YK-1832), (Seq. I.D.  
40 65);  
HGVTKPKQVIKLDADPVESQ (YK-1374), (Seq. I.D. 66);  
GLVRKNLVQFGVGEKNGCVR (YK-1376), (Seq. I.D. 67);  
DVVLMMKVPTIPKFRDITQHF (YK-1382), (Seq. I.D. 68);  
MEEKATYVHKKNDGTTVDLT (YK-1388), (Seq. I.D. 69);  
45 KNDGTTVDLTVDQAWRGKGE (YK-1389), (Seq. I.D. 70);  
RGKGEGPLPGMCGGALVSSNQ (YK-1390), (Seq. I.D. 71);  
VAKLVTQEMFQNIKKIESQ (YK-1393), (Seq. I.D. 72);

and conservative variations thereof.

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48. The composition in accordance with claim 47, wherein said immunogenic peptide is conjugated to a carrier protein.

49. The compositions in accordance with claim 48, wherein said carrier protein is a member selected from the group consisting of serum albumin, keyhole limpet hemocyanin, diphtheria toxin, tetanus toxin and synthetic polymers.

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50. A method of inducing an immune response to HAV in a mammal, said method comprising administering to said mammal an immunologically effective amount of a pharmaceutical composition comprising a pharmaceutically acceptable carrier and an isolated, immunogenic HAV peptide, said immunogenic peptide comprising  
10 an amino acid sequence selected from the group consisting of

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GLDHILSLADIEEEQMIQSV (YK-1206), (Seq. I.D. 1);  
DRTAVTGASYFTSVDQSSVH (YK-1208), (Seq. I.D. 2);  
EVGSHQVEPLRTSVDKPGSK (YK-1210), (Seq. I.D. 3);  
EPLRTSVDKPGSKKTQGEKF (YK-1211), (Seq. I.D. 4);  
DKPGSKKTQGEKFFLIHSAD (YK-1212), (Seq. I.D. 5);  
LYNEQFAVQGLLRHYHTYARF (YK-1215), (Seq. I.D. 6);  
HTYARFQIEIQVINPTPFQ (YK-1216), (Seq. I.D. 7);  
INPTFQGGGLICAMVPGDQ (YK-1217), (Seq. I.D. 8);  
HFKDPQYPVWELTIRVWSEL (YK-1222), (Seq. I.D. 9);  
NIGTGTSAYTSLNVLARFTD (YK-1224), (Seq. I.D. 10);  
SDPSQGGGIKITHFTTWTSI (YK-1235), (Seq. I.D. 11);  
GGIKITHFTTWTSIPTLAAQ (YK-1236), (Seq. I.D. 12);  
QFPFNASDSVGQQIKVIPVD (YK-1241), (Seq. I.D. 13);  
FNASDSVGQQIKVIPVDPYF (YK-1242), (Seq. I.D. 14);  
SDSVGQQIKVIPVDPYFFQM (YK-1243), (Seq. I.D. 15);  
IKVIPVDPYFFQMTNTNPDQ (YK-1244), (Seq. I.D. 16);  
KCITALASICQMFCEFWRGDL (YK-1247), (Seq. I.D. 17);  
FWRGDLVFDFOVFPTKYHSG (YK-1248), (Seq. I.D. 18);  
FDFQVFPTKYHSGRLLFCFV (YK-1249), (Seq. I.D. 19);  
FPTKYHSGRLLFCFVPGNEL (YK-1250), (Seq. I.D. 20);  
GITLKQATTAPCAVMDITGV (YK-1252), (Seq. I.D. 21);  
VASHVRVNVYLSAINLECFA (YK-1261), (Seq. I.D. 22);  
TTVSTEQNVPDPQVGITTMK (YK-1265), (Seq. I.D. 23);  
QNVDPDPQVGITTMKDLKGKA (YK-1266), (Seq. I.D. 24);  
NRGKMDVSGVQAPVGAITTI (YK-1268), (Seq. I.D. 25);  
ITTIEDPVLAKKVPETFPEL (YK-1271), (Seq. I.D. 26);  
EDPVLAKKVPETFPELKPGE (YK-1272), (Seq. I.D. 27);  
AKKVPETFPELKPGESRHTS (YK-1273), (Seq. I.D. 28);  
FPELKPGESRHTSDHMSIYK (YK-1274), (Seq. I.D. 29);  
DHMSIYKFMGRSHFLCTFTF (YK-1276), (Seq. I.D. 30);  
HFLCTFTFNSNNKEYTFPIT (YK-1279), (Seq. I.D. 31);  
TPVGLAVDTPWVEKESALSI (YK-1290), (Seq. I.D. 32);  
LSFSCYLSVTEQSEFYFPRA (YK-1307), (Seq. I.D. 33);  
SVTEQSEFYFPRAPLNSNAM (YK-1308), (Seq. I.D. 34);  
PLNSNAMLSTESMMSRIAAG (YK-1310), (Seq. I.D. 35);  
MSRIAAGDLESSVDDPRSEE (YK-1312), (Seq. I.D. 36);  
AGDLESSVDDPRSEEDKRFE (YK-1313), (Seq. I.D. 37);  
VDDPRSEEDKRFESHIECRK (YK-1314), (Seq. I.D. 38);  
SHIECRKPYKELRLEVKGQR (YK-1315), (Seq. I.D. 39);

5 PYKELRLEVVGKQRLKYAQEE (YK-1316), (Seq. I.D. 40);  
 QRLKYAQEELSNEVLPPPRK (YK-1317), (Seq. I.D. 41);  
 VLPPPRKMKGLFSQAKISLF (YK-1318), (Seq. I.D. 42);  
 FSQAKISLFYTEEHEIMKFS (YK-1319), (Seq. I.D. 43);  
 KVNFPHGMLDLEEIAANSKD (YK-1327), (Seq. I.D. 44);  
 DLEEIAANSKDFPNMSETDL (YK-1328), (Seq. I.D. 45);  
 KINLADRMLGLSGVQEIKEQ (YK-1331), (Seq. I.D. 46);  
 QRLKYAQEELSNEVLPPPRKMKGLF (YK-1665), (Seq. I.D. 47);  
 10 WLNPKKINLADRMLGLSGVQEIKEQ (YK-1757), (Seq. I.D. 48);  
 VIQQLNQDEHSHIIGLLRVM (YK-1334), (Seq. I.D. 49);  
 NLKDNQQKIEKAIEEAEDEF (YK-1341), (Seq. I.D. 50);  
 LGSINQAMVTRCEPVVCYLY (YK-1347), (Seq. I.D. 51);  
 15 RCEPVVCYLYGKRGGKSLT (YK-1348), (Seq. I.D. 52);  
 TKPVASDYWDGYSQQLVCII (YK-1352), (Seq. I.D. 53);  
 VSGCPMRLNLMASLEEKGRHF (YK-1356), (Seq. I.D. 54);  
 LNMALEEKGRHFSSPFIIA (YK-1357), (Seq. I.D. 55);  
 NPSPKTVYVKEAIDRRLHFK (YK-1360), (Seq. I.D. 56);  
 20 VKEAIDRRLHFKVEVKPASF (YK-1361), (Seq. I.D. 57);  
 VKPASFFKNPHNDMLNVNLA (YK-1362), (Seq. I.D. 58);  
 KNPHNDMLNVNLAKTNDAIK (YK-1363), (Seq. I.D. 59);  
 LAKTNDAIKDMSCVDLIMDG (YK-1364), (Seq. I.D. 60);  
 VMTVEIRKQNMTEFMELWSQ (YK-1367), (Seq. I.D. 61);  
 25 SQGISDDDDNSAVAEFFQSF (YK-1368), (Seq. I.D. 62);  
 DSAVAEFFQSFSPGEPNSK (YK-1369), (Seq. I.D. 63);  
 FQSFSPGEPNSKLSGFFQS (YK-1370), (Seq. I.D. 64);  
 SAVAEFFQSFSPGEPNSKLSGFFQ (YK-1832), (Seq. I.D. 65);  
 30 HGVTKPKQVIKLDADPVESQ (YK-1374), (Seq. I.D. 66);  
 GLVRKNLVQFGVGEKNGCVR (YK-1376), (Seq. I.D. 67);  
 DVVLMKVPTIPKFRDITQHF (YK-1382), (Seq. I.D. 68);  
 MEEKATYVHKKNDGTTVDLT (YK-1388), (Seq. I.D. 69);  
 KNDGTTVDLTVDQAWRGKGE (YK-1389), (Seq. I.D. 70);  
 35 RGKGGLPGMCGGALVSSNQ (YK-1390), (Seq. I.D. 71);  
 VAKLVTQEMFQNDKKIESQ (YK-1393), (Seq. I.D. 72);

and conservative variations thereof.

40 **51.** The method in accordance with claim 50, wherein said immunogenic peptide is conjugated to a carrier protein.

**52.** A method of detecting the presence of antibodies against HAV in mammalian serum, said method comprising:

45 (a) contacting an isolated, immunogenic HAV peptide with antibodies from mammalian serum, said immunogenic peptide comprising an amino acid sequence selected from the group consisting of

GLDHILSLADIEEEQMIQSV (YK-1206), (Seq. I.D. 1);

5 DRTAVTGASYFTSVDQSSVH (YK-1208), (Seq. I.D. 2);  
EVGSHQVEPLRTSVDKPGSK (YK-1210), (Seq. I.D. 3);  
EPLRTSVDKPGSKKTQGEKF (YK-1211), (Seq. I.D. 4);  
DKPGSKKTQGEKFFLIHSAD (YK-1212), (Seq. I.D. 5);  
LYNEQFAVQGLLRHYHTYARF (YK-1215), (Seq. I.D. 6);  
HTYARFGIEIQVQINPTPFQ (YK-1216), (Seq. I.D. 7);  
INPTPFQQGGLICAMVPGDQ (YK-1217), (Seq. I.D. 8);  
HFKDPQYPVWELTIRVWSEL (YK-1222), (Seq. I.D. 9);  
10 NIGTGTSAYTSLNVLARFTD (YK-1224), (Seq. I.D. 10);  
SDPSQGGGIKITHFTTWTISI (YK-1235), (Seq. I.D. 11);  
GGIKITHFTTWTISIPTLAAQ (YK-1236), (Seq. I.D. 12);  
QFPFNASDSVGQQIKVIPVD (YK-1241), (Seq. I.D. 13);  
FNASDSVGQQIKVIPVDPYF (YK-1242), (Seq. I.D. 14);  
SDSVGQQIKVIPVDPYFFQM (YK-1243), (Seq. I.D. 15);  
15 IKVIPVDPYFFQMTNTNPDQ (YK-1244), (Seq. I.D. 16);  
KCITALASICQMFCFWRGDL (YK-1247), (Seq. I.D. 17);  
FWRGDLVDFQVFPPTYHSG (YK-1248), (Seq. I.D. 18);  
FDFQVFPPTYHSGRLLFCFV (YK-1249), (Seq. I.D. 19);  
FPTYHSGRLLFCFVPGNEL (YK-1250), (Seq. I.D. 20);  
20 GITLKQATTAPCAVMDITGV (YK-1252), (Seq. I.D. 21);  
VASHVRVNVYLSAINLECEA (YK-1261), (Seq. I.D. 22);  
TTVSTEQNVDPQVGTMTMK (YK-1265), (Seq. I.D. 23);  
QNVDPQVGTMTMKDLKGA (YK-1266), (Seq. I.D. 24);  
NRGKMDVSGVQAPVGAITI (YK-1268), (Seq. I.D. 25);  
25 ITTIEDPVLAKKVPETFPPEL (YK-1271), (Seq. I.D. 26);  
EDPVLAKKVPETFPPELKPGE (YK-1272), (Seq. I.D. 27);  
AKKVPETFPPELKPGE SRHTS (YK-1273), (Seq. I.D. 28);  
FPPELKPGE SRHTSDHMSIYK (YK-1274), (Seq. I.D. 29);  
30 DHMSIYKFMGRSHFLCTFTF (YK-1276), (Seq. I.D. 30);  
HFLCTFTFNSNNKEYTTPIT (YK-1279), (Seq. I.D. 31);  
TPVGLAVDTPWVEKESALSI (YK-1290), (Seq. I.D. 32);  
LSFSCYLSVTEQSEFYFPRA (YK-1307), (Seq. I.D. 33);  
SVTEQSEFYFPRAPLNSNAM (YK-1308), (Seq. I.D. 34);  
35 PLNSNAMLSTESMMSRIAAG (YK-1310), (Seq. I.D. 35);  
MSRIAAGDLESSVDDPRSEE (YK-1312), (Seq. I.D. 36);  
AGDLESSVDDPRSEEDKRFE (YK-1313), (Seq. I.D. 37);  
VDDPRSEEDKRFESHIECRK (YK-1314), (Seq. I.D. 38);  
SHIECRKPYKELRLEVVGKQR (YK-1315), (Seq. I.D. 39);  
40 PYKELRLEVVGKQRLKYAQEE (YK-1316), (Seq. I.D. 40);  
QRLKYAQEELSNEVLPPPRK (YK-1317), (Seq. I.D. 41);  
VLPPPRKMKGLFSQAKISLF (YK-1318), (Seq. I.D. 42);  
FSQAKISLFYTEEHEIMKFS (YK-1319), (Seq. I.D. 43);  
KVNFPHGMLDLEEIAANSKD (YK-1327), (Seq. I.D. 44);  
45 DLEEIAANSKD FPNMSETDL (YK-1328), (Seq. I.D. 45);  
KINLADRMLGLSGVQEIKEQ (YK-1331), (Seq. I.D. 46);  
QRLKYAQEELSNEVLPPPRKMKGLF (YK-1665), (Seq. I.D. 47);  
WLNPKKINLADRMLGLSGVQEIKEQ (YK-1757), (Seq. I.D. 48);  
50 VIQQLNQDEHSHIIGLLRVM (YK-1334), (Seq. I.D. 49);  
NILKDNQQKIEKAIEEAEDEF (YK-1341), (Seq. I.D. 50);  
LGSINQAMVTRCEPVVCYLY (YK-1347), (Seq. I.D. 51);  
RCEPVVCYLYGKRGGGKSLT (YK-1348), (Seq. I.D. 52);  
TKPVASDYWDGYSGQLVCII (YK-1352), (Seq. I.D. 53);  
55 VSGCPMRLNMALEEKGGRHF (YK-1356), (Seq. I.D. 54);

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conservative variations thereof.

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(b) detecting the formation of complexes between said immunogenic peptide and said antibodies.

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53. A method in accordance with claim 52, further comprising contacting a second immunogenic HAV peptide with antibodies from the mammalian serum, wherein said second immunogenic peptide is independently selected from the group consisting of

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LNMASLEEKGRHFSSPFIIA (YK-1357), (Seq. I.D. 55);  
 NPSPKTVYVKEAIDRRLHFK (YK-1360), (Seq. I.D. 56);  
 VKEAIDRRLHFKVEVKPASF (YK-1361), (Seq. I.D. 57);  
 VKPASFFKNPHNDMLNVNLA (YK-1362), (Seq. I.D. 58);  
 KNPHNDMLNVNLAKTNDIAIK (YK-1363), (Seq. I.D. 59);  
 LAKTNDIAIKDMSCVDLIMDG (YK-1364), (Seq. I.D. 60);  
 VMTVEIRKQNMTEFMELWSQ (YK-1367), (Seq. I.D. 61);  
 SQGISDDNDNSAVAEFFQS (YK-1368), (Seq. I.D. 62);  
 DSAVAEFFQSFPSPGEPNSK (YK-1369), (Seq. I.D. 63);  
 FQSFPSPGEPNSKLSGFFQS (YK-1370), (Seq. I.D. 64);  
 SAVAFAEFFQSFPSPGEPNSKLSGFFQ (YK-1832), (Seq. I.D. 65);

HGVTKPKQVIKLDADPVESQ (YK-1374), (Seq. I.D. 66);  
 GLVRKNLVQFGVGEKNGCVR (YK-1376), (Seq. I.D. 67);  
 DVVLMKVPTIPKFRDITQHF (YK-1382), (Seq. I.D. 68);  
 MEEKATYVHKKNDGTTVDLT (YK-1388), (Seq. I.D. 69);  
 KNDGTTVDLTVDQAWRGKGE (YK-1389), (Seq. I.D. 70);  
 RGKGEGLPGMCGGALVSSNQ (YK-1390), (Seq. I.D. 71);  
 VAKLVTQEMFQNIIDKKIESQ (YK-1393), (Seq. I.D. 72);

GLDHILSLADIEEEQMIQSV (YK-1206), (Seq. I.D. 1);  
 DRTAVTGASYFTSVDQSSVH (YK-1208), (Seq. I.D. 2);  
 EVGSHQVEPLRTSVDKPGSK (YK-1210), (Seq. I.D. 3);  
 EPLRTSVDKPGSKKTQGEKF (YK-1211), (Seq. I.D. 4);  
 DKPGSKKTQGEKFFLIHSAD (YK-1212), (Seq. I.D. 5);  
 LYNEQFAVQGLLRYHTYARF (YK-1215), (Seq. I.D. 6);  
 HTYARFGIEIQVQINPTPFQ (YK-1216), (Seq. I.D. 7);  
 INPTPFQGGGLICAMVPGDQ (YK-1217), (Seq. I.D. 8);  
 HFKDPQYPVWELTIRVWSEL (YK-1222), (Seq. I.D. 9);  
 NIGTGTSAYTSLNVLARFTD (YK-1224), (Seq. I.D. 10);  
 SDPSQGGGIKITHFTTWTSI (YK-1235), (Seq. I.D. 11);  
 GGIKITHFTTWTSIPTLAAQ (YK-1236), (Seq. I.D. 12);  
 QFPFNASDSVGQQIKVIPVD (YK-1241), (Seq. I.D. 13);  
 FNASDSVGQQIKVIPVDPYF (YK-1242), (Seq. I.D. 14);  
 SDSVGQQIKVIPVDPYFFQM (YK-1243), (Seq. I.D. 15);  
 IKVIPVDPYFFQMTNTNPDQ (YK-1244), (Seq. I.D. 16);  
 KCITALASICQMFCFWRGDL (YK-1247), (Seq. I.D. 17);  
 FWRGDLVFDQVFPTKYHSG (YK-1248), (Seq. I.D. 18);  
 FDFQVFPTKYHSGRLLFCFV (YK-1249), (Seq. I.D. 19);  
 FPTKYHSGRLLFCFVPGNEL (YK-1250), (Seq. I.D. 20);

5 GITLKQATTAPCAVMDITGV (YK-1252), (Seq. I.D. 21);  
VASHVRVNVYLSAINLECFA (YK-1261), (Seq. I.D. 22);  
TTVSTEQNVPDPQVGITTMK (YK-1265), (Seq. I.D. 23);  
QNVDPDPQVGITTMKDLKGKA (YK-1266), (Seq. I.D. 24);  
NRGKMDVSGVQAPVGAITTI (YK-1268), (Seq. I.D. 25);  
ITTIEDPVLAKKVPETFPEL (YK-1271), (Seq. I.D. 26);  
EDPVLAKKVPETFPELKPGE (YK-1272), (Seq. I.D. 27);  
AKKVPETFPELKPGEsrHTS (YK-1273), (Seq. I.D. 28);  
FPELKPGEsrHTSDHMSIYK (YK-1274), (Seq. I.D. 29);  
10 DHMSIYKFMGRSHFLCTFTF (YK-1276), (Seq. I.D. 30);  
HFLCTFTFNSNNKEYTFPIT (YK-1279), (Seq. I.D. 31);  
TPVGLAVDTPWVEKESALSI (YK-1290), (Seq. I.D. 32);  
LSFSCYLSVTEQSEFYFPRA (YK-1307), (Seq. I.D. 33);  
SVTEQSEFYFPRAPLNSNAM (YK-1308), (Seq. I.D. 34);  
15 PLNSNAMLSTESMMSRIAAG (YK-1310), (Seq. I.D. 35);  
MSRIAAGDLESSVDDPRSEE (YK-1312), (Seq. I.D. 36);  
AGDLESSVDDPRSEEDKRFE (YK-1313), (Seq. I.D. 37);  
VDDPRSEEDKRFESHIECRK (YK-1314), (Seq. I.D. 38);  
SHIECRKPYKELRLEVVGKQR (YK-1315), (Seq. I.D. 39);  
20 PYKELRLEVVGKQRLKYAQEE (YK-1316), (Seq. I.D. 40);  
QRLKYAQEELSNEVLPPPRK (YK-1317), (Seq. I.D. 41);  
VLPPPRKMKGLFSQAKISLF (YK-1318), (Seq. I.D. 42);  
FSQAKISLFYTEEHEIMKFS (YK-1319), (Seq. I.D. 43);  
KVNFPHGMLDDEEIAANSKD (YK-1327), (Seq. I.D. 44);  
25 DLEEIAANSKDFPNMSETDL (YK-1328), (Seq. I.D. 45);  
KINLADRMLGLSGVQEIKEQ (YK-1331), (Seq. I.D. 46);  
QRLKYAQEELSNEVLPPPRKMKGLF (YK-1665), (Seq. I.D. 47);  
WLNPKKINLADRMLGLSGVQEIKEQ (YK-1757), (Seq. I.D. 48);  
30 VIOQLNQDEHSHIIGLLRVM (YK-1334), (Seq. I.D. 49);  
NILKDNQOKIEKAIEEAEF (YK-1341), (Seq. I.D. 50);  
LGSINQAMVTRCEPYVCYLY (YK-1347), (Seq. I.D. 51);  
RCEPVVCYLYGKRGGKSLT (YK-1348), (Seq. I.D. 52);  
35 TKPVASDYWDGYSGQLVQII (YK-1352), (Seq. I.D. 53);  
VSGCPMRLNMAASLEEKGRHF (YK-1356), (Seq. I.D. 54);  
LNMAASLEEKGRHFSSPFI (YK-1357), (Seq. I.D. 55);  
NPSPKTVYVKEAIDRRRLHFK (YK-1360), (Seq. I.D. 56);  
VKEAIDRRRLHFKVEVKPASF (YK-1361), (Seq. I.D. 57);  
40 VKPASFFKNPHNDMLNVNLA (YK-1362), (Seq. I.D. 58);  
KNPHNDMLNVNLAKTNDAIK (YK-1363), (Seq. I.D. 59);  
LAKTNDAIKDMSVDLIMDG (YK-1364), (Seq. I.D. 60);  
VMTVEIRKQNMTEFMELWSQ (YK-1367), (Seq. I.D. 61);  
SQGISDDDDNSAVAEFFQSF (YK-1368), (Seq. I.D. 62);  
45 DSAVAEFFQSFPSGEPNSK (YK-1369), (Seq. I.D. 63);  
FQSFPSGEPNSKLSGFFQS (YK-1370), (Seq. I.D. 64);  
SAVAEFFQSFPSGEPNSKLSGFFQ (YK-1832), (Seq. I.D. 65);  
50 HGVTKPKQVIKLDADPVESQ (YK-1374), (Seq. I.D. 66);  
GLVRKNLVQFGVGEKNGCVR (YK-1376), (Seq. I.D. 67);  
DVLMLKVPTIPKFRDITQHF (YK-1382), (Seq. I.D. 68);  
MEEKATYVHKKNDBGTTVDLT (YK-1388), (Seq. I.D. 69);  
KNDGTTVDLTVDQAWRGKGE (YK-1389), (Seq. I.D. 70);  
RGKGGLPGMCGGALVSSNQ (YK-1390), (Seq. I.D. 71);

VAKLVTQEMFQNIDKKIESQ (YK-1393), (Seq. I.D. 72);

and conservative variations thereof.

5                   **54.** A method in accordance with claim **52**, wherein said immunogenic peptide comprises the following amino acid sequences

QRLKYAQEELSNEVLPPPRKMGLF (YK-1665), (Seq. I.D. 47);

10                   and conservative variations thereof.

15                   **55.** A method in accordance with claim **54**, further comprising an immunogenic peptide comprising an amino acid sequence selected from the group consisting of

48;                   WLNPKKINLADRMLGLSGVQEIKEQ (YK-1757), (Seq. I.D.

20                   65);                   SAVAEFFQSFRSGEPSNSKLSGFEEQ (YK-1832), (Seq. I.D.

and conservative variations thereof.

25                   **56.** A method of differentiating between vaccine-induced immunity and natural HAV immunity, said method comprising:

(a) contacting an isolated, nonstructural, immunogenic HAV peptide with antibodies from mammalian serum, said nonstructural immunogenic peptide comprising an amino acid sequence selected from the group consisting of

30                   SHIECRKPYKELRLEVVGKQR (YK-1315), (Seq. I.D. 39);  
PYKELRLEVVGKQRLKYAQEE (YK-1316), (Seq. I.D. 40);  
QRLKYAQEELSNEVLPPPRK (YK-1317), (Seq. I.D. 41);  
35                   VLPPPRKMGLFSQAKISLF (YK-1318), (Seq. I.D. 42);  
FSQAKISLFYTEEHEIMKFS (YK-1319), (Seq. I.D. 43);  
KVNFPHGMLDLEEIAANSKD (YK-1327), (Seq. I.D. 44);  
DLEEIAANSKDFPNMSETDL (YK-1328), (Seq. I.D. 45);  
KINLADRMLGLSGVQEIKEQ (YK-1331), (Seq. I.D. 46);  
40                   QRLKYAQEELSNEVLPPPRKMGLF (YK-1665), (Seq. I.D. 47);  
WLNPKKINLADRMLGLSGVQEIKEQ (YK-1757), (Seq. I.D. 48);  
VIQQLNQDEHSHIIGLLRVM (YK-1334, (Seq. I.D. 49);  
45                   NILKDNQQKIEKAIEEAEDEF (YK-1341), (Seq. I.D. 50);  
LGSINQAMVTRCEPVVCYLY (YK-1347), (Seq. I.D. 51);  
RCEPVVCYLYGKRGGGKSLT (YK-1348), (Seq. I.D. 52);  
TKPVASDYWDGYSGQLVCII (YK-1352), (Seq. I.D. 53);



5 VSGCPMRLNMASLEEKGRHF (YK-1356), (Seq. I.D. 54);  
 LNMASLEEKGRHFSSPFIIA (YK-1357), (Seq. I.D. 55);  
 NPSPKTVYVKEAIDRRLHFK (YK-1360), (Seq. I.D. 56);  
 VKEAIDRRLHFKVEVKPASF (YK-1361), (Seq. I.D. 57);  
 VKPASFFKNPHNDMLNVNLA (YK-1362), (Seq. I.D. 58);  
 KNPHNDMLNVNLAKTNDIAIK (YK-1363), (Seq. I.D. 59);  
 LAKTNDIAIKDMSCVDLIMDG (YK-1364), (Seq. I.D. 60);  
 VMTVEIRKQNMTEFMELWSQ (YK-1367), (Seq. I.D. 61);  
 SQGISDDNDNSAVAEFFQSF (YK-1368), (Seq. I.D. 62);  
 10 DSAVAEFFQSFPSGEPSSNSK (YK-1369), (Seq. I.D. 63);  
 PSFSPSGEPSSNSKLSGFFQS (YK-1370), (Seq. I.D. 64);  
 SAVAEFFQSFPSGEPSSNSKLSGFFQ (YK-1832), (Seq. I.D. 65);  
 HGVTKPKQVIKLDADPVESQ (YK-1374), (Seq. I.D. 66);  
 15 GLVRKNLVQFGVGEKNGCVR (YK-1376), (Seq. I.D. 67);  
 DVVLMKVPTIPKFRDITQHF (YK-1382), (Seq. I.D. 68);  
 MEEKATYVHKKNDGTTVDLT (YK-1388), (Seq. I.D. 69);  
 KNDGTTVDLTVDQAWRGKGE (YK-1389), (Seq. I.D. 70);  
 RGKGEGLPGMCGGALVSSNQ (YK-1390), (Seq. I.D. 71);  
 20 VAKLVTQEMFQNIKKIESQ (YK-1393), (Seq. I.D. 72);

conservative variations thereof; and

(b) detecting the formation of complexes between said immunogenic peptide and said antibodies, wherein the presence of peptide-antibody complexes indicates natural HAV immunity.

25 **57.** A method in accordance with claim **56**, further comprising further comprising contacting a second immunogenic HAV peptide with antibodies from the mammalian serum, wherein said second immunogenic peptide is independently selected from the group consisting of

30 SHIECRKPYKELRLEVVGKQR (YK-1315), (Seq. I.D. 39);  
 PYKELRLEVVGKQRLKYAQEE (YK-1316), (Seq. I.D. 40);  
 QRLKYAQEELSNEVLPPPRK (YK-1317), (Seq. I.D. 41);  
 VLPPPRKMKGLFSQAKISLF (YK-1318), (Seq. I.D. 42);  
 35 FSQAKISLFYTEEHEIMKFS (YK-1319), (Seq. I.D. 43);  
 KVNFPHGMLDLEEIAANSKD (YK-1327), (Seq. I.D. 44);  
 DLEEIAANSKDFPNMSETDL (YK-1328), (Seq. I.D. 45);  
 KINLADRMLGLSGVQEIKEQ (YK-1331), (Seq. I.D. 46);  
 QRLKYAQEELSNEVLPPPRKMKGLF (YK-1665), (Seq. I.D. 47);  
 40 WLNPKKINLADRMLGLSGVQEIKEQ (YK-1757), (Seq. I.D. 48);  
 VIQQLNQDEHSHIIGLLRVM (YK-1334), (Seq. I.D. 49);  
 NILKDNQQKIEKAIEEDEF (YK-1341), (Seq. I.D. 50);  
 LGSINQAMVTRCEPVVCYLY (YK-1347), (Seq. I.D. 51);  
 45 RCEPVVCYLYGKRGGGKSLT (YK-1348), (Seq. I.D. 52);  
 TKPVASDYWDGYSGQLVCII (YK-1352), (Seq. I.D. 53);  
 VSGCPMRLNMASLEEKGRHF (YK-1356), (Seq. I.D. 54);  
 LNMASLEEKGRHFSSPFIIA (YK-1357), (Seq. I.D. 55);

5 NPSPKTVYVKEAIDRRLHFK (YK-1360), (Seq. I.D. 56);  
VKEAIDRRLHFKVEVKPASF (YK-1361), (Seq. I.D. 57);  
VKPASFFKNPHNDMLNVNLA (YK-1362), (Seq. I.D. 58);  
KNPHNDMLNVNLAKTNDIAIK (YK-1363), (Seq. I.D. 59);  
LAKTNDIAIKDMSCVDLIMDG (YK-1364), (Seq. I.D. 60);  
VMTVEIRKQNMTEFMELWSQ (YK-1367), (Seq. I.D. 61);  
SQGISDDNDSSAVAEFFQSF (YK-1368), (Seq. I.D. 62);  
DSAVAEFFQSFPSPGEPSSNSK (YK-1369), (Seq. I.D. 63);  
10 FQSFPSPGEPSSNSKLSGFFQS (YK-1370), (Seq. I.D. 64);  
SAVAEFFQSFPSPGEPSSNSKLSGFFQ (YK-1832), (Seq. I.D.  
65);

15 HGVTKPKQVIKLDADPVESQ (YK-1374), (Seq. I.D. 66);  
GLVRKNLVQFGVGEKNGCVR (YK-1376), (Seq. I.D. 67);  
DVVLMKVPTIPKFRDITQHF (YK-1382), (Seq. I.D. 68);  
MEEKATYVHKKNDGTTVDLT (YK-1388), (Seq. I.D. 69);  
KNDGTTVDLTVDQAWRGKGE (YK-1389), (Seq. I.D. 70);  
RGKGEGLPGMCGGALVSSNQ (YK-1390), (Seq. I.D. 71);  
VAKLVTQEMFQNIKKIESQ (YK-1393), (Seq. I.D. 72);

and conservative variations thereof.

20 **58.** A method in accordance with claim 56, wherein said  
immunogenic HAV peptide comprises the following amino acid sequences

25 QRLKYAQEELSNEVLPPPRKMKGLF (YK-1665), (Seq. I.D.  
47);

and conservative variations thereof.

30 **59.** A method in accordance with claim 58, further comprising an  
immunogenic peptide comprising an amino acid sequence selected from the group  
consisting of

35 WLNPKKINLADRMLGLSGVQEIKEQ (YK-1757), (Seq. I.D.  
48);  
SAVAEFFQSFPSPGEPSSNSKLSGFFQ (YK-1832), (Seq. I.D.  
65);

and conservative modifications thereof.

40 **60.** A kit for the diagnosis of HAV, said kit comprising a container  
and an isolated, immunogenic HAV peptide, said immunogenic peptide comprising an  
amino acid sequence selected from the group consisting of

45 GLDHILSLADIEEEQMIQSV (YK-1206), (Seq. I.D. 1);  
DRTAVTGASYFTSVDQSSVH (YK-1208), (Seq. I.D. 2);  
EVGSHQVEPLRTSVDKPGSK (YK-1210), (Seq. I.D. 3);  
EPLRTSVDKPGSKKTQGEKF (YK-1211), (Seq. I.D. 4);  
DKPGSKKTQGEKFFLIHSAD (YK-1212), (Seq. I.D. 5);

5 LYNEQFAVQGLLRYHTYARF (YK-1215), (Seq. I.D. 6);  
HTYARFGIEIQVQINPTPFQ (YK-1216), (Seq. I.D. 7);  
INPTPFQGGGLICAMVPGDQ (YK-1217), (Seq. I.D. 8);  
HFKDPQYPVWELTIRVWSEL (YK-1222), (Seq. I.D. 9);  
NIGTGTSAYTSLNVLARFTD (YK-1224), (Seq. I.D. 10);  
SDPSQGGGIKITHFTTWTSI (YK-1235), (Seq. I.D. 11);  
GGIKITHFTTWTSIPTLAAQ (YK-1236), (Seq. I.D. 12);  
QFPFNASDSVGQQIKVIPVD (YK-1241), (Seq. I.D. 13);  
FNASDSVGQQIKVIPVDPYF (YK-1242), (Seq. I.D. 14);  
10 SDSVGQQIKVIPVDPYFFQM (YK-1243), (Seq. I.D. 15);  
IKVIPVDPYFFQMTNTNPDQ (YK-1244), (Seq. I.D. 16);  
KCITALASICQMFCFWRGDL (YK-1247), (Seq. I.D. 17);  
FWRGDLVDFDQVFPTKYHSG (YK-1248), (Seq. I.D. 18);  
FDFQVFPTKYHSGRLLFCFV (YK-1249), (Seq. I.D. 19);  
15 FPTKYHSGRLLFCFVPGNEL (YK-1250), (Seq. I.D. 20);  
GITLQATTAPCAVMDITGV (YK-1252), (Seq. I.D. 21);  
VASHVRVNVYLSAINLECFA (YK-1261), (Seq. I.D. 22);  
TTVSTEONVPDPQVGITTMK (YK-1265), (Seq. I.D. 23);  
QNVPDPQVGITTMKDLKGKA (YK-1266), (Seq. I.D. 24);  
20 NRGKMDVSGVQAPVGAITTI (YK-1268), (Seq. I.D. 25);  
ITTIEDPVLAKKVPETFPPEL (YK-1271), (Seq. I.D. 26);  
EDPVLAKKVPETFPPELKPGE (YK-1272), (Seq. I.D. 27);  
AKKVPETFPPELKPGESRHTS (YK-1273), (Seq. I.D. 28);  
FPPELKPGESRHTSDHMSIYK (YK-1274), (Seq. I.D. 29);  
25 DHMSIYKFMGRSHFLCTFTF (YK-1276), (Seq. I.D. 30);  
HFLCTFTFNSNNKEYTFPII (YK-1279), (Seq. I.D. 31);  
TPVGLAVDTPWVEKESALSI (YK-1290), (Seq. I.D. 32);  
LSFSCYLSVTEQSEFYFRA (YK-1307), (Seq. I.D. 33);  
SVTEQSEFYFPRAPLNSNAM (YK-1308), (Seq. I.D. 34);  
30 PLNSNAMLSTESMMSRIAAG (YK-1310), (Seq. I.D. 35);  
MSRIAAGDLESSVDDPRSEE (YK-1312), (Seq. I.D. 36);  
AGDLESSVDDPRSEEDKRFE (YK-1313), (Seq. I.D. 37);  
VDDPRSEEDKRFEHIECRK (YK-1314), (Seq. I.D. 38);  
SHIECRKPYKELRLEVVGKQR (YK-1315), (Seq. I.D. 39);  
35 PYKELRLEVVGKQRLKYAQEE (YK-1316), (Seq. I.D. 40);  
QRLKYAQEELSNEVLPPPRK (YK-1317), (Seq. I.D. 41);  
VLPPPRKMKGLFSQAKISLF (YK-1318), (Seq. I.D. 42);  
FSQAKISLFYTEEHEIMKES (YK-1319), (Seq. I.D. 43);  
KVNFPHGMLDLEEIAANSKD (YK-1327), (Seq. I.D. 44);  
40 DLEEIAANSKDFPNMSETDL (YK-1328), (Seq. I.D. 45);  
KINLADRMLGLSGVQEIKEQ (YK-1331), (Seq. I.D. 46);  
QRLKYAQEELSNEVLPPPRKMKGLF (YK-1665), (Seq. I.D. 47);  
WLNPKKINLADRMLGLSGVQEIKEQ (YK-1757), (Seq. I.D. 48);  
45 VIQQLNQDEHSHIIGLLRVM (YK-1334), (Seq. I.D. 49);  
NILKDNQQKIEKAIEEDEF (YK-1341), (Seq. I.D. 50);  
LGSINQAMVTRCEPVVCYLY (YK-1347), (Seq. I.D. 51);  
RCEPVVCYLYGKRGGGKSLT (YK-1348), (Seq. I.D. 52);  
50 TKPVASDYWDGYSGQLVCII (YK-1352), (Seq. I.D. 53);  
VSGCPMRLNLMASLEEKGGRHF (YK-1356), (Seq. I.D. 54);  
LNMASLEEKGGRHFSSPFIIA (YK-1357), (Seq. I.D. 55);  
NPSPKTVYVKEAIDRRHLHF (YK-1360), (Seq. I.D. 56);  
VKEAIDRRHLHFKEVVKPASF (YK-1361), (Seq. I.D. 57);  
55 VKPASFFKNPHNDMLNVNLA (YK-1362), (Seq. I.D. 58);

KNPHNDMLNVNLAKTNDAIK (YK-1363), (Seq. I.D. 59);  
 LAKTNDAIKDMSCVDLIMDG (YK-1364), (Seq. I.D. 60);  
 VMTVEIRKQNMTEFMELWSQ (YK-1367), (Seq. I.D. 61);  
 SQGISDDDDNSAVAEFFQSF (YK-1368), (Seq. I.D. 62);  
 DSAVAEFFQSFPSGEPNSK (YK-1369), (Seq. I.D. 63);  
 FQSFPSGEPNSKLSGFFQS (YK-1370), (Seq. I.D. 64);  
 SAVAFAEFFQSFPSGEPNSKLSGFFQ (YK-1832), (Seq. I.D. 65);

HGVTKPKQVIKLDADPVESQ (YK-1374), (Seq. I.D. 66);  
 GLVRKNLVQFGVGEKNGCVR (YK-1376), (Seq. I.D. 67);  
 DVVLMKVPTIPKFRDITQHF (YK-1382), (Seq. I.D. 68);  
 MEEKATYVHKKNDGTTVDLT (YK-1388), (Seq. I.D. 69);  
 KNDGTTVDLTVDQAWRGKGE (YK-1389), (Seq. I.D. 70);  
 RGKGEGLPGMCGGALVSSNQ (YK-1390), (Seq. I.D. 71);  
 VAKLVTQEMFQNIKKIESQ (YK-1393), (Seq. I.D. 72);

and conservative variations thereof.

**61.** A kit in accordance with claim **60**, further comprising instructional materials for carrying out a diagnostic test for HAV.

**62.** A kit for differentiating between vaccine-induced immunity and natural HAV immunity, said kit comprising a container and an isolated, nonstructural immunogenic HAV peptide, said immunogenic peptide comprising an amino acid sequence selected from the group consisting of

SHIECRKPYKELRLEVVGKQR (YK-1315), (Seq. I.D. 39);  
 PYKELRLEVVGKQRKYAQEE (YK-1316), (Seq. I.D. 40);  
 QRLKYAQEELSNEVLPPPRK (YK-1317), (Seq. I.D. 41);  
 VLPPPRKMKGLFSQAKISLF (YK-1318), (Seq. I.D. 42);  
 FSQAKISLFYTEEHEIMKFS (YK-1319), (Seq. I.D. 43);  
 KVNFPHGMLDLEEIAANSKD (YK-1327), (Seq. I.D. 44);  
 DLEEIAANSKDFPNMSETDL (YK-1328), (Seq. I.D. 45);  
 KINLADRMLGLSGVQEIKEQ (YK-1331), (Seq. I.D. 46);  
 QRLKYAQEELSNEVLPPPRKMKGLF (YK-1665), (Seq. I.D. 47);  
 WLNPKKINLADRMLGLSGVQEIKEQ (YK-1757), (Seq. I.D. 48);  
 VIQQLNQDEHSHIIGLLRVM (YK-1334), (Seq. I.D. 49);  
 NILKDNQQKIEKAIEEDEF (YK-1341), (Seq. I.D. 50);  
 LGSINQAMVTRCEPVVCYLY (YK-1347), (Seq. I.D. 51);  
 RCEPVVCYLYGKRGGGKSLT (YK-1348), (Seq. I.D. 52);  
 TKPVASDYWDGYSGQLVCII (YK-1352), (Seq. I.D. 53);  
 VSGCPMRLNMALEEKGGRHF (YK-1356), (Seq. I.D. 54);  
 LNMALEEKGGRHFSSPPIIA (YK-1357), (Seq. I.D. 55);  
 NPSPKTVYVKEAIDRRLHFK (YK-1360), (Seq. I.D. 56);  
 VKEAIDRRLHFKVEVKPASF (YK-1361), (Seq. I.D. 57);  
 VKPASFFKNPHNDMLNVNLA (YK-1362), (Seq. I.D. 58);  
 KNPHNDMLNVNLAKTNDAIK (YK-1363), (Seq. I.D. 59);  
 LAKTNDAIKDMSCVDLIMDG (YK-1364), (Seq. I.D. 60);  
 VMTVEIRKQNMTEFMELWSQ (YK-1367), (Seq. I.D. 61);

SQGISDDDDNDSAVAIEFFQSF (YK-1368), (Seq. I.D. 62);  
 DSAVAIEFFQSFPSGEPNSK (YK-1369), (Seq. I.D. 63);  
 FQSFPSGEPNSKLSGFFQS (YK-1370), (Seq. I.D. 64);  
 SAVAIEFFQSFPSGEPNSKLSGFFQ (YK-1832), (Seq. I.D. 65);

5

HGVTKPKQVIKLDADPVESQ (YK-1374), (Seq. I.D. 66);  
 GLVRKNLVQFGVGEKNGCVR (YK-1376), (Seq. I.D. 67);  
 DVVLMKVPTIPKFRDITQHF (YK-1382), (Seq. I.D. 68);  
 MEEKATYVHKKNDGTTVDLT (YK-1388), (Seq. I.D. 69);  
 KNDGTTVDLTVDQAWRGKGE (YK-1389), (Seq. I.D. 70);  
 RGKGEGLPGMCGGALVSSNQ (YK-1390), (Seq. I.D. 71);

10

VAKLVTQEMFQNIKKIESQ (YK-1393), (Seq. I.D. 72);

and conservative variations thereof.

15

**63.** A kit in accordance with claim 62, further comprising instructional materials for carrying out a test for differentiating between vaccine-induced immunity and natural HAV immunity.

20

**64.** An isolated DNA sequence encoding a HAV immunogenic peptide having an amino acid sequence selected from the group consisting of

GLDHILSLADIEEEQMIQSV (YK-1206), (Seq. I.D. 1);  
 DRTAVTGASYFTSVDQSSVH (YK-1208), (Seq. I.D. 2);  
 EVGSHQVEPLRTSVDKPGSK (YK-1210), (Seq. I.D. 3);  
 EPLRTSVDKPGSKKTQGEKF (YK-1211), (Seq. I.D. 4);  
 DKPGSKKTQGEKFFLIHSAD (YK-1212), (Seq. I.D. 5);  
 LYNEQFAVQGLLRYHTYARF (YK-1215), (Seq. I.D. 6);  
 HTYARFGIEIQVQINPTPFQ (YK-1216), (Seq. I.D. 7);  
 INPTPFQGGGLICAMVPGDQ (YK-1217), (Seq. I.D. 8);  
 HFKDPQYPVWELTIRVWSEL (YK-1222), (Seq. I.D. 9);  
 NIGTGTSAYTSLNVLARFTD (YK-1224), (Seq. I.D. 10);  
 SDPSQGGGIKITHFTTWTSI (YK-1235), (Seq. I.D. 11);  
 GGIKITHFTTWTSIPTLAAQ (YK-1236), (Seq. I.D. 12);  
 QFPFNASDSVGQQIKVIPVD (YK-1241), (Seq. I.D. 13);  
 FNASDSVGQQIKVIPVDPYF (YK-1242), (Seq. I.D. 14);  
 SDSVGQQIKVIPVDPYFFQM (YK-1243), (Seq. I.D. 15);  
 IKVIPVDPYFFQMTNTNPDQ (YK-1244), (Seq. I.D. 16);  
 KCITALASICQMFCFWRGDL (YK-1247), (Seq. I.D. 17);  
 FWRGDLVFDQVFPTKYHSG (YK-1248), (Seq. I.D. 18);  
 FDFQVFPTKYHSGRLLFCFV (YK-1249), (Seq. I.D. 19);  
 FPTKYHSGRLLFCFVPGNEL (YK-1250), (Seq. I.D. 20);  
 GITLKQATTAPCAVMDITGV (YK-1252), (Seq. I.D. 21);  
 VASHVRNVYLSAINLECFA (YK-1261), (Seq. I.D. 22);  
 TTVSTEQNVDPDPQVGITTMK (YK-1265), (Seq. I.D. 23);  
 QNVDPDPQVGITTMKDLKGKA (YK-1266), (Seq. I.D. 24);  
 NRGKMDVSGVQAPVGAITTI (YK-1268), (Seq. I.D. 25);  
 ITTIEDPVLAKKVPETFPEL (YK-1271), (Seq. I.D. 26);  
 EDPVLAKKVPETFPELKPGE (YK-1272), (Seq. I.D. 27);  
 AKKVPETFPELKPGESRHTS (YK-1273), (Seq. I.D. 28);  
 FPELKPGESRHTSDHMSIYK (YK-1274), (Seq. I.D. 29);  
 DHMSIYKFMGRSHFLCTFTF (YK-1276), (Seq. I.D. 30);

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5 HFLCTFTFNSNNKEYTFPIT (YK-1279), (Seq. I.D. 31);  
 TPVGLAVDTPWVEKESALSI (YK-1290), (Seq. I.D. 32);  
 LSFSCYLSVTEQSEFYFPRA (YK-1307), (Seq. I.D. 33);  
 SVTEQSEFYFPRAPLNSNAM (YK-1308), (Seq. I.D. 34);  
 PLNSNAMLSTESMMSRIAAG (YK-1310), (Seq. I.D. 35);  
 MSRIAAGDLESSVDDPRSEE (YK-1312), (Seq. I.D. 36);  
 AGDLESSVDDPRSEEDKRFE (YK-1313), (Seq. I.D. 37);  
 VDDPRSEEDKRFESHIECRK (YK-1314), (Seq. I.D. 38);  
 SHIECRKPYKELRLEVVGKQR (YK-1315), (Seq. I.D. 39);  
 10 PYKELRLEVVGKQRLKYAQEE (YK-1316), (Seq. I.D. 40);  
 QRLKYAQEELSNEVLPPPRK (YK-1317), (Seq. I.D. 41);  
 VLPPPRKMKGFLFSQAKISLF (YK-1318), (Seq. I.D. 42);  
 VLSQAKISLFYTEEHEIMKFS (YK-1319), (Seq. I.D. 43);  
 KVNFPHGMLDLEEIAANSKD (YK-1327), (Seq. I.D. 44);  
 15 DLEEIAANSKDFPNMSETDL (YK-1328), (Seq. I.D. 45);  
 KINLADRMLGLSGVQEIKEQ (YK-1331), (Seq. I.D. 46);  
 QRLKYAQEELSNEVLPPPRKMKGFL (YK-1665), (Seq. I.D.  
 47);  
 20 WLNPKKINLADRMLGLSGVQEIKEQ (YK-1757), (Seq. I.D.  
 48);  
 VIQQLNQDEHSHIIGLLRVM (YK-1334), (Seq. I.D. 49);  
 NILKDNQOKIEKAIEEAEDEF (YK-1341), (Seq. I.D. 50);  
 LGSINQAMVTRCEPVVCYLY (YK-1347), (Seq. I.D. 51);  
 RCEPVVCYLYGKRGGGKSLT (YK-1348), (Seq. I.D. 52);  
 25 TKPVASDYWDGYSGQLVCH (YK-1352), (Seq. I.D. 53);  
 VSGCPMRLNMALEEKGRRHF (YK-1356), (Seq. I.D. 54);  
 LNMALEEKGRRHFSSPFI (YK-1357), (Seq. I.D. 55);  
 NPSPKTVYVKEAIDRRLHFK (YK-1360), (Seq. I.D. 56);  
 VKEAIDRRLHFKVEVKPASF (YK-1361), (Seq. I.D. 57);  
 30 VKPASFFKNPHNDMLNVNLA (YK-1362), (Seq. I.D. 58);  
 KNPHNDMLNVNLAKTNDIAIK (YK-1363), (Seq. I.D. 59);  
 LAKTNDIAIKDMSCVDLIMDG (YK-1364), (Seq. I.D. 60);  
 VMTVEIRKQNMTEFMELWSQ (YK-1367), (Seq. I.D. 61);  
 SQGISDDNDNSAVAEFFQSF (YK-1368), (Seq. I.D. 62);  
 35 DSAVAEFFQSFPSGEPNSK (YK-1369), (Seq. I.D. 63);  
 FQSFPSGEPNSKLSGFFQ (YK-1370), (Seq. I.D. 64);  
 SAVAEFFQSFPSGEPNSKLSGFFQ (YK-1832), (Seq. I.D.  
 65);  
 40 HGVTKPKQVIKLDADPVESQ (YK-1374), (Seq. I.D. 66);  
 GLVRKNLVQFGVGEKNGCVR (YK-1376), (Seq. I.D. 67);  
 DVVLMKVPTIPKFRDITQHF (YK-1382), (Seq. I.D. 68);  
 MEEKATYVHKKNDGTTVDLT (YK-1388), (Seq. I.D. 69);  
 KNDGTTVDLTVDQAWRGKGE (YK-1389), (Seq. I.D. 70);  
 RGKGGLPGMCGGALVSSNQ (YK-1390), (Seq. I.D. 71);  
 45 VAKLVTQEMFQNIKKIESQ (YK-1393), (Seq. I.D. 72);

and conservative variations thereof.

65. An immunogenic conjugate, said conjugate comprising:

- 50 (a) a carrier protein covalently attached to (b) an isolated, immunogenic HAV peptide, said immunogenic peptide comprising an amino acid selected from the group consisting of

5 GLDHILSLADIEEEQMIQSV (YK-1206), (Seq. I.D. 1);  
DRTAVTGASYFTSVDQSSVH (YK-1208), (Seq. I.D. 2);  
EVGSHQVÉPLRTSVDKPGSK (YK-1210), (Seq. I.D. 3);  
EPLRTSVDKPGSKKTQGEKF (YK-1211), (Seq. I.D. 4);  
DKPGSKKTQGEKFFLIHSAD (YK-1212), (Seq. I.D. 5);  
LYNEQFAVQGLLRYHTYARF (YK-1215), (Seq. I.D. 6);  
HTYARFGIEIQVQINPTPFQ (YK-1216), (Seq. I.D. 7);  
INPTPFQQGLICAMVPGDQ (YK-1217), (Seq. I.D. 8);  
10 HFKDPQYPVWELTIRVWSEL (YK-1222), (Seq. I.D. 9);  
NIGTGTSAYTSLNVLARFTD (YK-1224), (Seq. I.D. 10);  
SDPSQGGGIKITHFTTWTSI (YK-1235), (Seq. I.D. 11);  
GGIKITHFTTWTSIPTLAAQ (YK-1236), (Seq. I.D. 12);  
QFPFNASDSVGGQIKVIPVD (YK-1241), (Seq. I.D. 13);  
15 FNASDSVGGQIKVIPVDPYF (YK-1242), (Seq. I.D. 14);  
SDSVGGQIKVIPVDPYFFQM (YK-1243), (Seq. I.D. 15);  
IKVIPVDPYFFQMTNTNPDQ (YK-1244), (Seq. I.D. 16);  
KCTALASICQMFCFWRGDL (YK-1247), (Seq. I.D. 17);  
FWRGDLVFDQVFPTKYHSG (YK-1248), (Seq. I.D. 18);  
20 FDFQVFPTKYHSGRLLFCEV (YK-1249), (Seq. I.D. 19);  
FPTKYHSGRLLFCFVPGNEL (YK-1250), (Seq. I.D. 20);  
GITLKQATTAPCAVMDITGV (YK-1252), (Seq. I.D. 21);  
VASHVRVNVYLSAINLECHA (YK-1261), (Seq. I.D. 22);  
TTVSTEONVPDPQVGITTMK (YK-1265), (Seq. I.D. 23);  
25 QNVDPDPQVGITTMKDLKKA (YK-1266), (Seq. I.D. 24);  
NRGKMDVSGVQAPVGATTI (YK-1268), (Seq. I.D. 25);  
ITTIEDPVLAKKVPETFPPEL (YK-1271), (Seq. I.D. 26);  
EDPVLAKKVPETFPRELKPE (YK-1272), (Seq. I.D. 27);  
AKKVPETFPRELKPGESRHTS (YK-1273), (Seq. I.D. 28);  
30 FPPELPGESRHTSDHMSIYK (YK-1274), (Seq. I.D. 29);  
DHMSIYKFMGRSHFLCTFTF (YK-1276), (Seq. I.D. 30);  
HFLCTFTFNSNNKEYTFPIT (YK-1279), (Seq. I.D. 31);  
TPVGLAVDTPWVEKESALSI (YK-1290), (Seq. I.D. 32);  
LSFSCYLSVTEQSEFYFPRA (YK-1307), (Seq. I.D. 33);  
35 SVTEQSEFYFPRAPLNSNAM (YK-1308), (Seq. I.D. 34);  
PLNSNAMLSTESMMSRIAAG (YK-1310), (Seq. I.D. 35);  
MSRIAAGDLESSVDDPRSEE (YK-1312), (Seq. I.D. 36);  
AGDLESSVDDPRSEEDKRFE (YK-1313), (Seq. I.D. 37);  
VDDPRSEEDKRFESHIECRK (YK-1314), (Seq. I.D. 38);  
40 SHIECRKPYKELRLEVVGKQR (YK-1315), (Seq. I.D. 39);  
PYKELRLEVVGKQRLKYAQEE (YK-1316), (Seq. I.D. 40);  
QRLKYAQEELSNEVLPPPRK (YK-1317), (Seq. I.D. 41);  
VLPPPRKMKGLFSQAKISLF (YK-1318), (Seq. I.D. 42);  
FSQAKISLFYTEEHEIMKFS (YK-1319), (Seq. I.D. 43);  
45 KVNFPHGMLDLEEIAANSKD (YK-1327), (Seq. I.D. 44);  
DLEEIAANSKDFPNMSETDL (YK-1328), (Seq. I.D. 45);  
KINLADRMLGLSGVQEIKEQ (YK-1331), (Seq. I.D. 46);  
QRLKYAQEELSNEVLPPPRKMKGLF (YK-1665), (Seq. I.D. 47);  
50 WLNPKKINLADRMLGLSGVQEIKEQ (YK-1757), (Seq. I.D. 48);  
VIQQLNQDEHSHIIGLLRVM (YK-1334), (Seq. I.D. 49);  
NILKDNQQKIEKAIEEDEF (YK-1341), (Seq. I.D. 50);  
LGSINQAMVTRCEPVVCYLY (YK-1347), (Seq. I.D. 51);  
55 RCEPVVCYLYGKRGGGKSLT (YK-1348), (Seq. I.D. 52);

5 TKPVASDYWDGYSGQLVCII (YK-1352), (Seq. I.D. 53);  
 VSGCPMRLNMASLEEKGRHF (YK-1356), (Seq. I.D. 54);  
 LNMASLEEKGRHFSSPFIIA (YK-1357), (Seq. I.D. 55);  
 NPSPKTVYVKEAIDRRLLHFK (YK-1360), (Seq. I.D. 56);  
 VKEAIDRRLLHFKVEVKPASF (YK-1361), (Seq. I.D. 57);  
 VKPASFFKNPHNDMLNVNLA (YK-1362), (Seq. I.D. 58);  
 KNPHNDMLNVNLAKTNDAIK (YK-1363), (Seq. I.D. 59);  
 LAKTNDAIKDMSCVDLIMDG (YK-1364), (Seq. I.D. 60);  
 10 VMTVEIRKQNMTEFMELWSQ (YK-1367), (Seq. I.D. 61);  
 SQGISDDDDNSAVAEFFQSF (YK-1368), (Seq. I.D. 62);  
 DSAVAEFFQSFPSGEPNSK (YK-1369), (Seq. I.D. 63);  
 FQSFPSPGEPNSKLSGFFQS (YK-1370), (Seq. I.D. 64);  
 SAVAEFFQSFPSGEPNSKLSGFFQ (YK-1832), (Seq. I.D.  
 65);  
 15 HGVTKPKQVIKLDADPVESQ (YK-1374), (Seq. I.D. 66);  
 GLVRKNLVQFGVGEKNGCVR (YK-1376), (Seq. I.D. 67);  
 DVVLMKVPTIPKFRDITQHF (YK-1382), (Seq. I.D. 68);  
 MEEKATYVHKKNDGTTVDLT (YK-1388), (Seq. I.D. 69);  
 KNDGTTVDLTVDQAWRGKGE (YK-1389), (Seq. I.D. 70);  
 20 RGKGEGLPGMCGGALVSSNQ (YK-1390), (Seq. I.D. 71);  
 VAKLVTQEMFQNIDKKIESQ (YK-1393), (Seq. I.D. 72);

and conservative variations thereof.

25 **66.** The conjugate in accordance with claim **65**, wherein said  
 carrier protein is a member selected from the group consisting of serum albumin, lamprey,  
 keyhole limpet hemocyanin, diphtheria toxin, tetanus toxin and synthetic polymers.

30 **67.** The conjugate in accordance with claim **65**, wherein said  
 carrier protein is covalently attached to said immunogenic peptide through at least one  
 spacer molecule.

35 **68.** A method of making an antibody against HAV, said method  
 comprising administering an immunogenic HAV peptide to a mammal, said immunogenic  
 peptide comprising an amino acid sequence selected from the group consisting of

40 GLDHILSLADIEEEQMIQSV (YK-1206), (Seq. I.D. 1);  
 DRTAVTGASYFTSVDQSSVH (YK-1208), (Seq. I.D. 2);  
 EVGSHQVEPLRTSVDKPGSK (YK-1210), (Seq. I.D. 3);  
 EPLRTSVDKPGSKKTQGEKF (YK-1211), (Seq. I.D. 4);  
 DKPGSKKTQGEKFFLIHSAD (YK-1212), (Seq. I.D. 5);  
 LYNEQFAVQGLLRHYTYARF (YK-1215), (Seq. I.D. 6);  
 HTYARFGIEIQVQINPTPFQ (YK-1216), (Seq. I.D. 7);  
 INPTPFQGGGLICAMVPGDQ (YK-1217), (Seq. I.D. 8);  
 45 HFKDPQYPVWELTIRVWSEL (YK-1222), (Seq. I.D. 9);  
 NIGTGTSAYTSLNVLARFTD (YK-1224), (Seq. I.D. 10);  
 SDPSQGGGIKITHFTTWTSI (YK-1235), (Seq. I.D. 11);  
 GGIKITHFTTWTSIPTLAAQ (YK-1236), (Seq. I.D. 12);



5 QPPFNASDSVGQQIKVIPVD (YK-1241), (Seq. I.D. 13);  
FNASDSVGQQIKVIPVDPYF (YK-1242), (Seq. I.D. 14);  
SDSVGQQIKVIPVDPYFFQM (YK-1243), (Seq. I.D. 15);  
IKVIPVDPYFFQMTNTNPDQ (YK-1244), (Seq. I.D. 16);  
KCITALASICQMFCFWRGDL (YK-1247), (Seq. I.D. 17);  
FWRGDLVFDQVFPPTYHSG (YK-1248), (Seq. I.D. 18);  
FDFQVFPPTYHSGRLLFCFV (YK-1249), (Seq. I.D. 19);  
FPTYHSGRLLFCFVPGNEL (YK-1250), (Seq. I.D. 20);  
GITLKQATTAPCAVMDITGV (YK-1252), (Seq. I.D. 21);  
10 VASHVRVNVYLSAINLECFA (YK-1261), (Seq. I.D. 22);  
TTVSTEQNVDPDPQVGITTMK (YK-1265), (Seq. I.D. 23);  
QNVDPDPQVGITTMKDLKGKA (YK-1266), (Seq. I.D. 24);  
NRGKMDVSGVQAPVGAITTI (YK-1268), (Seq. I.D. 25);  
15 ITTIEDPVLAKKVPETFPPEL (YK-1271), (Seq. I.D. 26);  
EDPVLAKKVPETFPPELKPGE (YK-1272), (Seq. I.D. 27);  
AKKVPETFPPELKPGESRHTS (YK-1273), (Seq. I.D. 28);  
FPPELKPGESRHTSDHMSIYK (YK-1274), (Seq. I.D. 29);  
DHMSIYKFMGRSHFLCTFTF (YK-1276), (Seq. I.D. 30);  
HFLCTFTFNSNNKEYTFPIT (YK-1279), (Seq. I.D. 31);  
20 TPVGLAVDTPWVEKESALSI (YK-1290), (Seq. I.D. 32);  
LSFSCYLSVTEQSEFYFPRA (YK-1307), (Seq. I.D. 33);  
SVTEQSEFYFPRAPLNSNAM (YK-1308), (Seq. I.D. 34);  
PLNSNAMLSTESMMSRIAAG (YK-1310), (Seq. I.D. 35);  
MSRIAAGDLESSVDDPRSEE (YK-1312), (Seq. I.D. 36);  
25 AGDLESSVDDPRSEEDKFFE (YK-1313), (Seq. I.D. 37);  
VDDPRSEEDKFFESHIECRK (YK-1314), (Seq. I.D. 38);  
SHIECRKPYKELRLEVQKOR (YK-1315), (Seq. I.D. 39);  
PYKELRLEVQKORLYAQEE (YK-1316), (Seq. I.D. 40);  
QRLKYAQEELSNEVLPPPRK (YK-1317), (Seq. I.D. 41);  
30 VLPMPRKMKGLFSQAKISLF (YK-1318), (Seq. I.D. 42);  
FSQAKISLFYTEEHEIMKFS (YK-1319), (Seq. I.D. 43);  
KVNFPHGMLDLEEIAANSKD (YK-1327), (Seq. I.D. 44);  
DLEEIAANSKDFPNMSETDL (YK-1328), (Seq. I.D. 45);  
KINLADRMLGLSGVQEIKEQ (YK-1331), (Seq. I.D. 46);  
35 QRLKYAQEELSNEVLPPPRKMKGLF (YK-1665), (Seq. I.D. 47);  
WLNPKKINLADRMLGLSGVQEIKEQ (YK-1757), (Seq. I.D. 48);  
40 VIQQLNQDEHSHIIGLLRVM (YK-1334), (Seq. I.D. 49);  
NILKDNQOKIEKAIEEAEDEF (YK-1341), (Seq. I.D. 50);  
LGSINQAMVTRCEPVVCYLY (YK-1347), (Seq. I.D. 51);  
RCEPVVCYLYGKRGGGKSLT (YK-1348), (Seq. I.D. 52);  
TKPVASDYWDGYSGQLVCII (YK-1352), (Seq. I.D. 53);  
VSGCPMRLNMAASLEEKGRHF (YK-1356), (Seq. I.D. 54);  
45 LNMAASLEEKGRHFSSPFIIA (YK-1357), (Seq. I.D. 55);  
NPSPKTVYVKEAIDRRHLHF (YK-1360), (Seq. I.D. 56);  
VKEAIDRRHLHFKEVKPAS (YK-1361), (Seq. I.D. 57);  
VKPASFFKNPHNDMLNVNLA (YK-1362), (Seq. I.D. 58);  
KNPHNDMLNVNLAKTNDIAIK (YK-1363), (Seq. I.D. 59);  
50 LAKTNDIAIKDMSCVDLIMDG (YK-1364), (Seq. I.D. 60);  
VMTVEIRKQNMTEFMELWSQ (YK-1367), (Seq. I.D. 61);  
SQGISDDDDNSAVAEFFQSF (YK-1368), (Seq. I.D. 62);  
DSAVAEFFQSFPSGEPSSNSK (YK-1369), (Seq. I.D. 63);  
FQSFPSGEPSSNSKLSGFFQS (YK-1370), (Seq. I.D. 64);

SAVAEFFQSFPSPGEPNSKLSGFFQ (YK-1832), (Seq. I.D. 65);

HGVTKPKQVIKLDADPVESQ (YK-1374), (Seq. I.D. 66);

GLVRKNLVQFGVGEKNGCVR (YK-1376), (Seq. I.D. 67);

5 DVVLMKVPTIPKFRDITQHF (YK-1382), (Seq. I.D. 68);

MEEKATYVHKKNDGTTVDLT (YK-1388), (Seq. I.D. 69);

KNDGTTVDLTVDQAWRGKGE (YK-1389), (Seq. I.D. 70);

RGKGEGLPGMCGGALVSSNQ (YK-1390), (Seq. I.D. 71);

10 VAKLVTQEMFQNIKKIESQ (YK-1393), (Seq. I.D. 72);

and conservative variations thereof.

ADD A1  
Sub. #3